

mollusk flesh, probably most of which was *Ampullaria*. Identification in this instance was made more difficult because only the fleshy part of the animal had been consumed. Plant fiber or seed fragments made up but 0.01 per cent of the volume of the total content.

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## EGG LAYING BY THE COWBIRD DURING MIGRATION

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Centuries ago Solomon wrote, "there is no new thing under the sun", and yet from time to time events transpire that seem to reveal a new thing. Interest in bird study during recent years has revealed much that has long been merely conjecture concerning the life histories of some of our familiar birds, and the acquired facts have usually corroborated earlier opinions of what actually happened. Yet exceptions do occur. And in the case of the Cowbird, a species already marked by its unique breeding habits, it would appear that there is some justification in considering recent knowledge of its actions during spring as something "new".

A study of the range of the Cowbird (*Molothrus ater ater*) in the southeastern States shows it to be a common migrant south of Virginia. According to the fourth edition of the A. O. U. Check-List it does not breed on the Atlantic slope south of central Virginia, and actual records of eggs or young in that State are scarce. Like the other blackbirds, it is a hardy species and in the fall normally lingers in the northern States well into October and frequently much later. Despite these facts, however, young birds have appeared in the southern States with unfailing regularity in July, and their occurrence during summer both in the Carolinas and in Georgia has presented rather a perplexing problem. Arthur T. Wayne in his "Birds of South Carolina" has commented on the occurrence of Cowbirds at Charleston as early as July 25, and Dr. Herbert Friedmann in his monograph on this species states, "It is very puzzling to find that in the Southern States the first migrant Cowbirds are seen as early as the end of July."

During nearly ten years spent at Athens, Georgia (from September 1920 to January 1930) I frequently found this species appearing in the open fields and pastures shortly after the middle of July, my earliest record being July 17, 1928. Specimens collected proved to be fully grown young birds of the year, but at the time the significance of this fact escaped me.

In the course of field work carried on in western North Carolina, from January, 1930, through August, 1934, I again found Cowbirds appearing with unfailing regularity early in July in pastures about Asheville. As this conformed with the habits of the species farther south, little thought was given at the time to these early summer records. In fact, any explanation of this early summer movement of the birds would probably have been given little consideration had it not been for the unexpected discovery of the actual breeding of this species near Asheville. On June 10, 1933, Ernest Lyda, a local bird enthusiast, brought me a week-old fledgling taken from a Red-eyed Vireo's nest that, because of its size and actions, he suspected of being a young Cowbird. His surmise proved to be correct; and as this record extended materially the breeding range of the species, an attempt was made to determine whether eggs were being laid by more than one pair. Oddly enough no adult birds could be found anywhere despite a careful search of all suitable spots, and it was then that the thought that these birds might lay eggs in migration first suggested itself.

Further verification was, of course, necessary, and in 1934 a detailed study was made of the occurrence of the Cowbird about Asheville during the spring and summer. As in previous years, flocks of varying sizes were numerous during March and the first half of April. There was then a steady decrease in the numbers observed, and on May 4 the last individual was recorded, a male, feeding in an open pasture. In the following two months a systematic survey was made of all areas where these birds might occur. Open fields and pastures, farm yards, and all spots where cattle or other livestock might be grazing were inspected, but with no success. No adult Cowbirds were seen, and farmers who were questioned invariably expressed an opinion that the birds were not present during summer. It was of decided interest then to find early in June two Red-eyed Vireos' nests that had been parasitized by Cowbirds and that held a fledgling and an addled egg, respectively. These were near Weaverville, the place where the first fledgling had been taken, so the surrounding open country was subjected to an especially careful search, but no evidence was noted of the presence at that time of any adult birds. Early in July, as in past years, Cowbirds made their appearance about grazing cattle in pastures about Asheville, and a close scrutiny of these birds showed that all of them were fully grown young of the year. On August 2, twelve that were without exception young birds were seen in a field in the open Mills River Valley, and up to the middle of September no adults had been noted.

According to this evidence it would seem probable that Cowbirds actually do lay eggs in migration. It is realized that this suggests a situation without a parallel in the bird world but it would be difficult otherwise to reconcile the fact that young birds and eggs have been found in the nests of such species as the Red-eyed Vireos with the additional fact that adult birds could not be found during late spring and early summer despite the most diligent search. Fortunately the Cowbird is a relatively conspicuous bird during the breeding season, and because of its preference for the more open country is not easily

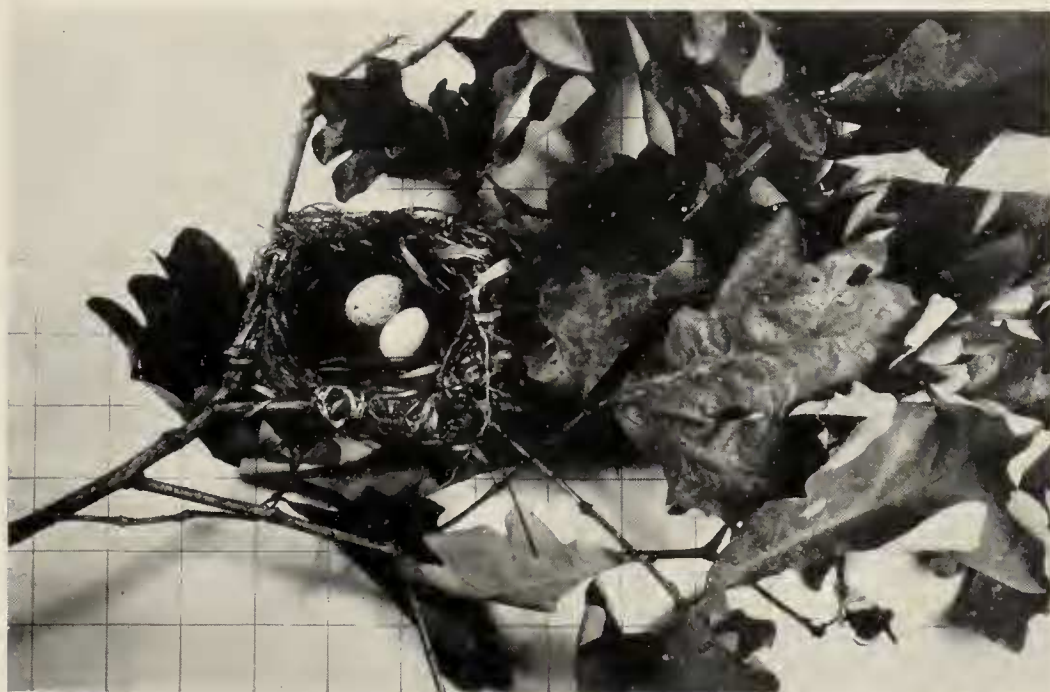


FIG. 3. Nest of the Red-eyed Vireo which contains an addled Cowbird's egg. Asheville, N. C., June, 1934.

overlooked. Of some species I would hesitate in being positive concerning their actual status, but I am confident that I did not overlook any Cowbirds.

My conclusion that the Cowbird lays eggs during its migration would explain the presence of the birds during summer far south of the range of the adult birds during the accepted breeding period, and would solve a problem that has long puzzled bird students in the southern States. It would also account for the supposed breeding records from Florida and Georgia that until now have been discredited, but that may thus prove to be authentic. An example is that of the Cowbird's egg included in a collection of eggs from Wayne and McIntosh Counties, Georgia, on the basis of which Ridgway gave Georgia as the southern breeding limit of the species. This was ques-

tioned by Wayne in his "Birds of South Carolina", and later was considered an error by Dr. Friedmann in his discussion of the present range of *Molothrus ater ater*. Personally I would be inclined to accept such a record as this, in view of the evidence I have just summarized, and include at least Georgia in the breeding range of this species. In this connection it is of interest to note that the host was a Red-eyed Vireo, agreeing in this respect with the preference shown in western North Carolina.

Further study is desirable and additional data should be secured to settle the question as to whether Cowbirds do lay eggs during migration. Bird students south of the now accepted breeding range of the Cowbird should note carefully the spots where the last migrants were observed in spring, and later, within a reasonable radius of such places, attempt to find as many nests as possible of such species as might possibly be parasitized. An occasional egg or nestling may reward such efforts, and ultimately reveal the proportion of Cowbirds laying in any one locality during migration. It is obvious that in the northern States it would be impracticable to try to determine where individual birds had laid.

In conclusion I might state that a seeming argument against this theory of laying during migration is the admitted appearance from time to time of adults, either male or female, in such states as South Carolina or Georgia early in summer. George E. Hudson has recorded an adult Cowbird observed at Clemson College, South Carolina, on June 17, and I personally have two such records for Athens, Georgia, for the middle of July. Such birds, however, are few and far between, and it is known that the post-breeding wanderings of many northern species frequently result in their occurrence in the southern States in June. The occurrence of a bird at a certain spot late in spring is always suggestive of a breeding bird, but unless the nest is actually found there is always the probability that it is a nonbreeding individual or one that has already finished nesting.

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